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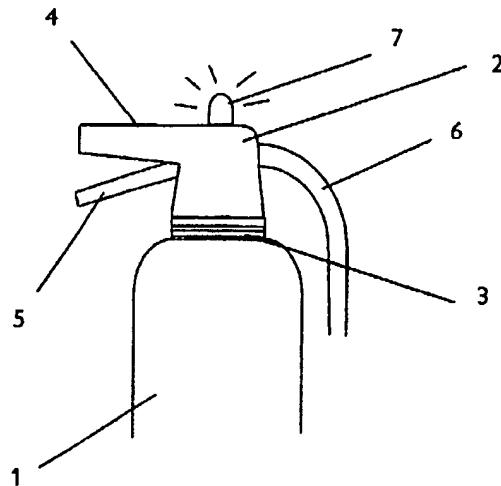
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(54) Abstract Title  
Fire extinguisher locator alarm

(57) A fire extinguisher (1) is provided with signalling means that indicate its location in conditions of reduced visibility. The signalling means may comprise a light source (7), e.g. from one or more light emitting diodes (LEDs), a sound source or a combination of both. The signalling means is preferably integrated into the handle (4) and powered by a battery source located in the handle, the battery source ideally being rechargeable and the handle adapted to be connected to a recharging port which may additionally support the extinguisher. The signalling means preferably also comprises detecting means to activate the signalling means in the event of a fire. The detecting means preferably comprise a photocell, smoke detector and a heat detector. The signalling means may comprise a self contained unit provided with fixing means (e.g. a heat resistant belt) enabling it to be releasably attached to the fire extinguisher. The signalling means may be coded to indicate which type of fire extinguisher it is associated. Also disclosed is a fire extinguisher mounting assembly provided with signalling means.

Fig 1



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Fig 1

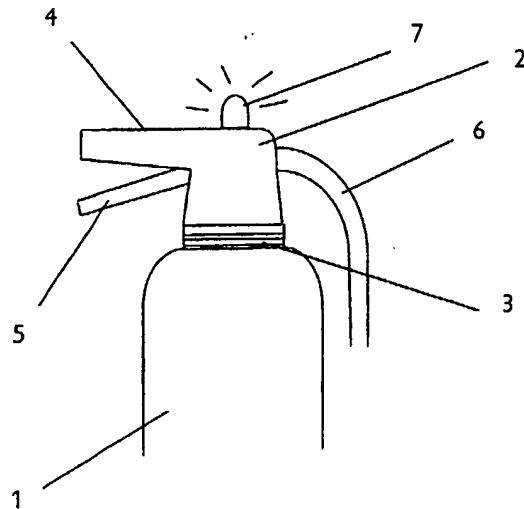


Fig 2

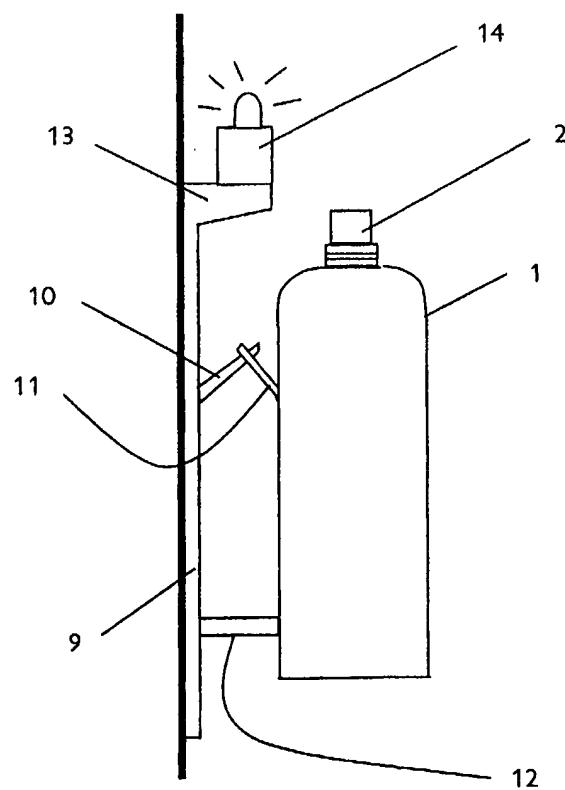
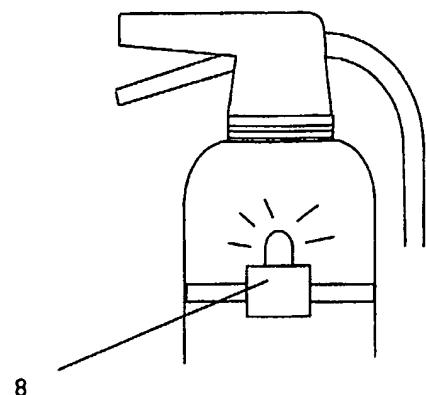


Fig 3

**FIRE EXTINGUISHER****Field of the Invention**

The invention relates to the field of fire extinguishers.

**Background of the Invention**

5        Throughout time fire has been man's greatest ally and his deadliest enemy. Many methods of fighting out-of-control fires have been developed. One of the most convenient methods for fire fighting is the fire extinguisher, which works by ejecting an agent such as water, foam or a powder, which helps to put out the fire.

10      The presence of fire extinguishers in buildings is a vital safety precaution, which provides a means of putting out fires, when it is safe to do so. In general fire extinguishers have bright, primary coloured canisters that alert any potential users of its presence.

15      This system serves to indicate the location of a fire extinguisher effectively in a normal well-lit environment. However, where there is fire there is smoke. A small fire in an enclosed environment can create a large amount of smoke, which can greatly reduce the visibility of the said environment. In situations such as this, locating a fire extinguisher to tackle the fire can be made difficult if not possible.

20      One way in which this problem has been approached in the past is for fire extinguishers to be situated near to fire exits. It is standard practise for fire exits to have illuminated signs to indicate their position, thus by finding the fire exit they are automatically directed to a fire extinguisher.

25      The effectiveness of this solution is negated by human nature and disrespect for fire regulations in general. It is common for fire extinguishers to be moved from their official positions, adjacent fire exits, for example to serve as doorstops; in these situations valuable time may be lost in searching for a misplaced fire extinguisher, putting lives an property at unnecessary risk.

30      More recently, emphasis has been placed on directing people out of premises where a fire has broken out. This is done by signs, arrows or the like, indicating the nearest fire exit. More sophisticated systems exist where lights are automatically illuminated to show the nearest fire exit. No attempt has been made, however, to enhance

the visibility of a fire extinguisher so that it can be used if safe to do so, especially where extinguishers are liable to be moved from their authorised or designated location.

**Statement of Invention**

In response to the problems inherent in the prior art, the invention provides a  
5 fire extinguisher provided with signalling means that indicate its location in conditions of reduced visibility.

The signalling means may comprise a light source, such as a Light-Emitting-Diode (LED), and/or a sound source, such as a high-pitched sound generator. It may be advantageous if the signals produced are intermittent.

10 In one embodiment of the invention the signalling means is integrated into part of the extinguisher, such as the handle.

The signalling means is preferably powered by a battery power source, which could be located within the handle. The battery power source could be replaced periodically when the fire extinguisher undergoes its required operational check.

15 It may be of further advantage if the battery is rechargeable to allow for continued use without the need for battery changes. The handle of the fire extinguisher could be connected to a recharging port situated at designated areas where fire extinguishers are intended to be positioned. Preferably the recharging port would also provide the function of fixing the fire extinguisher to the wall.

20 In embodiments where the location signalling is provided by a light source it may be beneficial for the light to be constantly illuminated. This would make it easier to spot when there is a problem with the signalling means, for example the power source is flat. This arrangement allows for any problems with the signalling system to be quickly rectified so that the fire extinguishers are constantly primed for an emergency. It is appreciated that the above function may also be carried out by a flashing light source.

The handle may preferably comprise a detecting means, which activates the signalling means in the event of a fire. The detecting means may comprise a photocell, a smoke detector and a heat detector. Combinations of these detector means would provide for more appropriate activation of the signalling means. For example if the

photocell sensed it was dark i.e. at night, the signalling means would not be activated until the smoke detector or heat detector was also activated.

In an alternative embodiment, the location indication device comprises signalling means, a power source and detector means, wherein the device has fixing means enabling it to be attached to a fire extinguisher.

It will be appreciated by the man skilled in the art that the signalling means, detector means and power source may be provided in a similar manner to that discussed above.

Preferably the fixing means is arranged so as to be securely attachable to a wide variety of fire extinguishers. The fixing means may comprise a belt made from a material, which will maintain the fixing under conditions of extreme heat, which could be secured around the canister of the fire extinguisher. Alternatives such as heat resistant glue may also be used.

In an arrangement where the device has a rechargeable battery power source, the device could have means for recharging, either directly from the mains power or through a recharging conduit. Where a recharging conduit is used, it may be preferable to locate it in the region where the fire extinguisher is normally kept, thus maintaining the device at full charge.

In a further embodiment of the invention, the signalling device forms part of a mounting means for a fire extinguisher.

The signalling light source could be colour coded to indicate the type of fire extinguisher to which the observer is being guided. For example a blue light could be used to indicate carbon dioxide fire extinguishers and a red light could indicate fire extinguishers containing water. It is appreciated that a similar system could be developed using sound signalling means.

The invention also comprises a method of indicating the location of a fire extinguisher in conditions of reduced visibility by means of a signalling device according to any of the previous paragraphs.

#### **Brief Description of the Drawings**

The invention will be described by reference to the following drawings, in which:

Figure 1 shows a signalling device in accordance with the invention forming part of the handle of a fire extinguisher;

Figure 2 shows a signalling device attached to the canister of a fire extinguisher

Figure 3 shows a signalling device incorporated in a wall mount for a fire extinguisher.

#### **Detailed Description of the Illustrated Embodiments**

Figure 1 shows the upper end of a typical fire extinguisher comprising a canister 1 containing foam, dry powder, carbon dioxide or water. Fixed to the top of the canister by means of a collar 3 is the operating part 2, which consists mainly of an upper handle 4 and a trigger handle 5 pivoted to the upper-part 2. A hose 6, or a nozzle, in the case of foam, extends from the upper part 2 and communicates with the contents of the canister 1 through a valve (not shown) operated by the handle 5.

In a first embodiment of the invention, the signalling device takes the form of a light source 7 integrated with the upper-part 2. The light source 7 is preferably one or 15 a group of LEDs within a domed cover which may include refractive or reflective lenses so as to enhance the light output from the LEDs. Within the upper-part 2 is a module (not shown) including a battery source and preferably one or more sensors. As previously mentioned, the sensors may respond to low light level, smoke or heat such that when the appropriate sensors are triggered, the power source is connected to the LEDs 20 to cause light to be emitted through the dome.

In variations of this embodiment, the power source may be either a battery, which has to be replaced at regular intervals, or a rechargeable cell. In the latter case the module within the upper-part 2 can include a charging circuit for the rechargeable cell or alternatively the module may contain a connector enabling the module to be 25 connected to a charging source (not shown) connected to a power outlet adjacent the location of the fire extinguisher. It is clearly important that the connector is of a type which can easily and quickly be disconnected such that the fire extinguisher can be deployed rapidly if needed.

In a second embodiment, the signalling device 8, as shown in figure 2, is adapted 30 to be attached to the canister 1 of the fire extinguisher. Any convenient form of at-

tachment may be employed. For the sake of example, figure 2 shows the module 8 attached by a strap, belt, chain or other such elongate fixing device. Alternatively, heat resistant adhesive could be used for a more permanent fixing.

In a third embodiment, as shown in figure 3, the fire extinguisher 1, complete with upper-part 2 and handles, hose or nozzle (not shown) is mounted on a wall or other upright surface by means of a bracket 9, screwed or otherwise attached to the surface. A spigot 10 extending from the bracket 9 engages a loop 11 formed on the canister of the fire extinguisher 1 so as to support the extinguisher off the floor. The lower end of the support 9 includes a stand-off 12 to keep the canister upright. The upper end of the support 9 has a portion 13 on which is mounted the signalling module 14.

In each of the above embodiments, the signalling device can be completely self-contained in that it includes a battery as the power source. Alternatively the module could be powered from a mains supply located nearby.

Instead of, or in addition to, the optical signalling device thus far described, the device could include an audible signalling means. This could be a buzzer, siren or other sound emitter.

In the case of an optical signalling device, the LEDs could be arranged to flash intermittently at all times. Under conditions of reduced visibility, a sensor in the module could be arranged to trigger the circuitry within the module to change to constant illumination so as to improve visibility. Similarly, in the case of an audible signalling device, it could be arranged to give a low-level intermittent "beep" or other such sound during normal conditions but to change to a sound with a different characteristic in order to alert people to the location of the extinguisher.

In all cases, where the module incorporates "intelligent" circuitry and sensors to detect conditions appropriate to a fire, a photo cell or the like forming part of the module could be used to ensure that it is not triggered by low ambient light, such as at night. Triggering would then only be initiated if a smoke or other detector sensed fire conditions.

If desired, the colour of the light emitted by the device could be chosen to indicate the type of fire extinguisher. For example a blue light could be used to indicate a carbon dioxide fire extinguisher whereas a red light could indicate a water-based fire extinguisher. Comparable variation in the sound emitted in the case of a sound signalling device could likewise indicate the type of extinguisher.

In its simplest form, the signalling device need be no more complicated than a light source constantly illuminated by a battery, integrated with the handle 4, as in Figure 1, attached by a belt around the canister 8, as in Figure 2, or integrated or attached to a wall-mounting bracket 9, as shown in Figure 3 of the drawings.

**Claims**

1. A fire extinguisher provided with signalling means that indicate its location in conditions of reduced visibility.
- 5 2. A fire extinguisher according to Claim 1, wherein the signalling means comprise a light source.
3. A fire extinguisher according to Claim 1, wherein the signalling means comprise a sound source.
4. A fire extinguisher according to Claim 1, wherein the signalling means comprise a combination of a light source and a sound source.
- 10 5. A fire extinguisher according to Claim 2 or Claim 4, wherein the light source comprises one or more LEDs.
6. A fire extinguisher according to Claim 3 or Claim 4, wherein the sound source is a high-pitched sound generator.
- 15 7. A fire extinguisher according to Claim 1, wherein the signalling means is integrated into part of the extinguisher.
8. A fire extinguisher according to Claim 7, wherein the signalling means is integrated into a handle of the fire extinguisher.
9. A fire extinguisher according to any of the preceding claims, wherein the 20 signalling means is powered by a battery power source located within a, or the, handle of the fire extinguisher.
10. A fire extinguisher according to Claim 9, wherein the battery source is rechargeable and the handle is adapted to be connected to a recharging port.
11. A fire extinguisher according to Claim 10, wherein the fire extinguisher 25 is adapted to be supported by the recharging port.
12. A fire extinguisher according to any preceding claim, wherein the signalling means further comprise detecting means to activate the signalling means in the event of a fire.
13. A fire extinguisher according to Claim 12, wherein the signals produced 30 by the signalling means are normally intermittent and are changed to signals of a different character when fire and/or smoke is detected by said detecting means.

14. A fire extinguisher according to Claim 12 or Claim 13, wherein the detecting means comprise a photocell, a smoke detector and a heat detector.

15. A fire extinguisher according to Claim 2 or Claim 4, wherein the light source is constantly illuminated.

5 16. A fire extinguisher according to Claim 1, wherein the signalling means is a self-contained unit provided with a power source and fire and/or smoke detection means, wherein the unit has fixing means enabling it to be releasably attached to said fire extinguisher.

10 17. A fire extinguisher according to Claim 16, wherein the fixing means comprise a heat-resistant belt adapted to be secured around a canister of the fire extinguisher.

18. A fire extinguisher as claimed in any of the preceding claims, wherein the signalling means is coded to indicate the type of fire extinguisher with which the signalling means is associated.

15 19. A fire extinguisher mounting assembly comprising signalling means that indicate the location of the mounting assembly in conditions of reduced visibility.

20. A method of indicating the location of a fire extinguisher and/or a fire extinguisher mounting assembly in conditions of reduced visibility by means of a signalling device fixed to a fire extinguisher or mounting assembly in accordance with any of 20 the preceding claims.



Application No: GB 0115531.6  
Claims searched: 1 - 18 & 20

Examiner: Heather Scott  
Date of search: 29 October 2002

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): A5A A4, A11, A15, A35

Int Cl (Ed.7): A62C+, G08B+

Other: Online: EPODOC, WPI JAPIO

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2205493 A (BEAUMONT) see page 5 lines 5 - 20	1 - 4, 7, 12 & 20
X	WO 00/43964 A1 (MORRIS) see whole document	1 - 5, 7, 12, 19 & 20
X	US 5153567 A (CHIMENTO) see column 3 lines 30 - 43	1 - 4, 12 & 20

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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